

# Community Science Bird Monitoring 2022 Project Report



## PROJECT OVERVIEW

The Jordan River watershed traverses the most highly populated areas in the state of Utah. Despite years of degradation and alteration, riparian areas in the Jordan River watershed provide critical habitat for migratory and resident birds. In 2011, Tracy Aviary began its community science bird monitoring program. Working with land owners, managers, and other partners at 12 different monitoring sites, our goals are to:

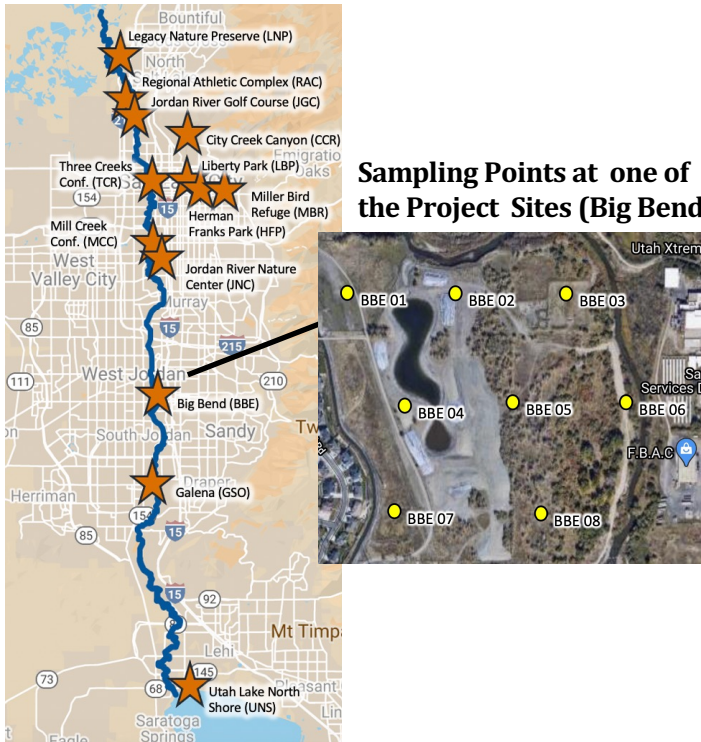
- 1) Establish a baseline understanding of the avian community, and monitor spatial and temporal trends in habitat use
- 2) Evaluate the impacts of human disturbances, different management methods, and restoration projects
- 3) Provide recommendations to project partners about how they can enhance the bird habitat

Here, we summarize results from our 2022 field season.

## STUDY SITES

This bird monitoring program includes twelve study sites in the Salt Lake region. We generated sampling points within each of these study site where we conducted bird and vegetation surveys.

### Bird Monitoring Sites



**Sampling Points at one of the Project Sites (Big Bend)**

## BIRD SURVEY METHODS



### Breeding Season Point Count Surveys

During April – July of 2022, 35 community scientists and Tracy Aviary staff conducted breeding season point count surveys at twelve study sites. Point count surveys were conducted by pairs of community scientists between dawn and 10am. The ‘observer’ identified all birds seen and heard during six minutes, and noted the number of individuals, distance, and direction. The ‘recorder’ wrote all of the observations on the datasheet, and also noted weather and site variables, such as wind speed and cloud cover.



### Non-breeding Season Group Surveys

Information from point count surveys was supplemented by non-breeding group surveys conducted at each site in January, February, March, August, September, October, November, and December 2022. During non-breeding surveys, groups of volunteers led by a trained Tracy Aviary staff person walked a transect through the site and noted all birds seen and heard in the area.



### Owl Playback Surveys

During February - May, when owls are most likely to be vocalizing, groups of volunteers led by a trained aviary staff person walked the sites in the evening listening for owls, stopping periodically to play owl calls and listen for responses.

# 2022 BIRD MONITORING RESULTS

## 2022 SURVEY SUMMARY

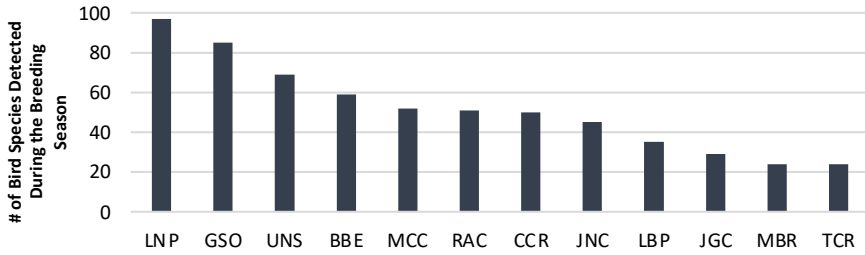
During the 2022 breeding season, we conducted 528 total point counts at 12 bird monitoring sites. We had 20,091 individual bird detections of 150 species. During the non-breeding season, we conducted 87 non-breeding season surveys, and had 66,500 bird observations of 178 species. During 18 owl surveys, we had 41 owl observations and detected 6 owl species.

Study Site	Breeding Season Surveys	Non-breeding Surveys	Owl Surveys
Big Bend (BBE)	4	7	1
City Creek Canyon (CCR)	3	8	4
Galena (GSO)	4	7	2
Legacy Nature Preserve (LNP)	5	7	1
Liberty Park (LBP)	4	8	4
Miller Bird Refuge (MBR)	4	7	2
Mill Creek Confluence (MCC)	5	8	0
Three Creeks Conf. (TCR)	5	7	0
Jordan River Nature Center (JNC)	5	8	1
Utah Lake North Shore (UNS)	5	8	1
Regional Athletic Complex (RAC)	5	7	1
Jordan River Golf Course (JGC)	5	5	1

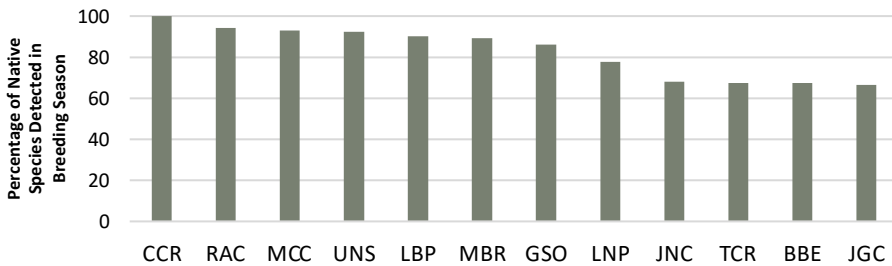
## Comparison to Other Sites Along the Jordan River

We can measure the health of an urban riparian site by looking at several metrics, including species richness (the number of species detected), and the proportion of native, urban-sensitive, and riparian-associated birds that use the site. Here, we compare all of the sites monitored in 2022.

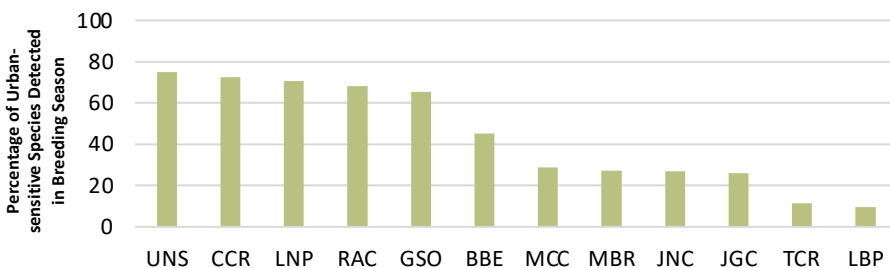
### Species Richness



### Native Bird Species



### Urban-Sensitive Bird Species



# 2022 BIRD MONITORING RESULTS

## Bird Habitat Use Patterns Throughout the Jordan River

We use breeding season data to help understand how habitat features and landscape attributes impact where different bird species are found; information that could help with land management and restoration decisions that create, protect, or enhance healthy bird habitat for target species. A multi-season occupancy modeling analysis using bird survey data from 2013-2022 identified the most important factors influencing habitat use by three target riparian-associated and three urban-associated species across our bird monitoring sites. Our analysis examined which habitat attributes (Table 1) influenced the probability that these species would use an area within our sampling sites, or locally colonize or go extinct from an area.

### Occupancy Analysis: Species Results

**Canopy Cover** was found to be an important factor for habitat use by Song Sparrows. They were more likely to occupy and less likely to go locally extinct from areas with higher canopy cover. Bullock's Orioles were more likely to occupy areas with more herbaceous vegetation, and were more likely to locally colonize areas with greater shrub cover. **These results highlight the importance of maintaining and enhancing vertical structure, including canopy trees, shrubs, and herbaceous plants on the ground.**

**Distance to River** was found to be an important factor for habitat use by all of the target species examined. All species had decreased habitat use as distance from river increased, and Yellow Warblers were also less likely to locally colonize areas further from the river. **This finding highlights the importance of enhancing habitat directly surrounding the river.**

Urban-associated species such as House Finches and House Sparrows were less likely to use habitat with a greater **Buffer Distance** to the developed area, and House Sparrows were more likely to go locally extinct from areas further from development. This finding highlights the importance of providing a large area of protected space that can buffer sites from development, and decrease use by non-target urban-adapted species.

**Table 1.** Habitat and landscape attributes included in occupancy analysis.

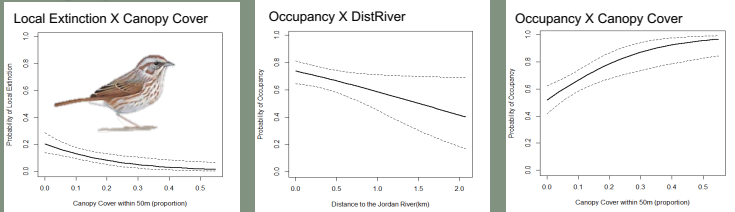
Variable	Measurement (unit)
Canopy Cover	Tree canopy cover within 50m (%)
Canopy Lost*	Decrease in canopy cover from first to last year of monitoring
Shrub Cover	Shrub cover within 50m (%)
Shrub Lost*	Decrease in shrub cover from first to last year of monitoring
Herb Cover	Herbaceous cover within 50m (%)
Water Cover	Cover of water within 50m (%)
Native Canopy	Cover of native canopy trees within 50m
DistRiver	Distance to the river or stream (km)
Riparian125	Riparian or wetland habitat within 125m (%)
Buffer	Buffer distance to nearest developed area (km)

\*Variable only included as covariate for local extinction or colonization parameters

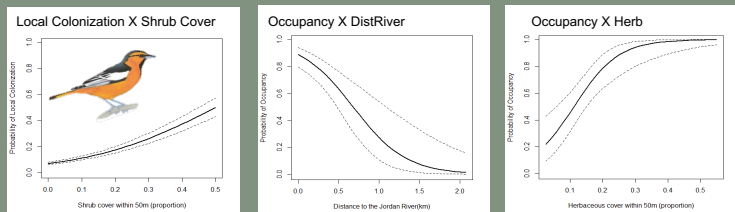
### Riparian-Associated Birds

#### Habitat Relationship Graphs

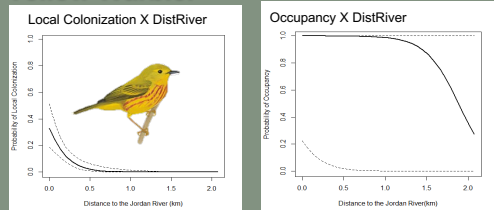
#### Song Sparrow



#### Bullock's Oriole



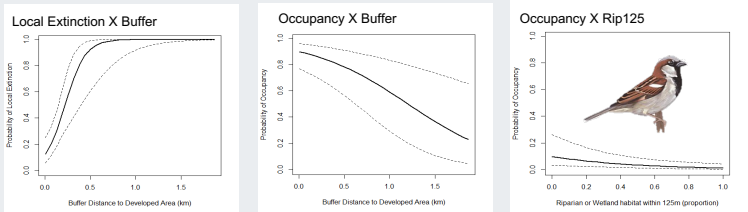
#### Yellow Warbler



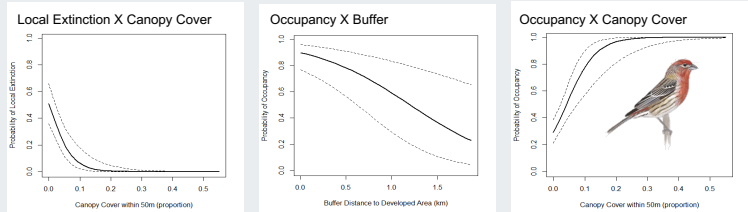
### Urban-Associated Birds

#### Habitat Relationship Graphs

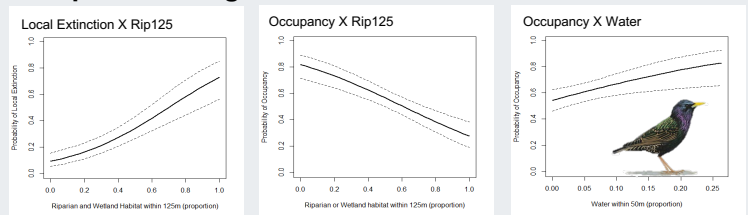
#### House Sparrow



#### House Finch



#### European Starling



# RECOMMENDATIONS TO ENHANCE AND PRESERVE BIRD HABITAT

**Plant and maintain trees, shrubs, and other native vegetation over a large footprint of the site.** This vegetation will enhance the contiguous habitat along the Jordan River corridor and provide a buffer from the surrounding roads and residential development.

**Keep dogs on leash and discourage use of site by cats.** These domestic animals can cause direct mortalities or disturbance to birds.

**Maintain standing dead trees** to provide habitat for cavity-nesting species. Avoid complete removal if possible; cutting them to a height of 10ft can mitigate safety concerns while still providing cavities.

**Promote vertical structure and canopy cover** throughout the site by protecting existing trees/shrubs and/or replacing trees that are removed. This will enhance habitat for riparian-associated birds such as warblers, flycatchers, and orioles.

**No tree removal or thinning activities should take place during the breeding and nesting season (April – July).** If trees are to be removed, mature trees should be thinned out slowly while they are replaced so vertical structure and fruiting resources are maintained throughout the restoration process.

**Improve water quality** in the river to support healthy aquatic invertebrate communities.

**Add and enhance wetland and ephemeral water elements.** Ephemeral water components and additional wetland vegetation will create high quality habitat for species such as Red-winged and Yellow-headed Blackbirds, Virginia Rails and Sora, Marsh Wrens, and Common Yellowthroats.

**Acknowledgements:** We'd like to thank the Val A. Browning Foundation for sponsoring this work. Thanks also to project partners and the extremely dedicated team of volunteers from Tracy Aviary's Community Science Program who braved early mornings and long hours to collect these data.